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EXAMINER

NGUYEN, DILINH P

ART UNIT

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/608,718
Filing Date: June 27, 2003
Appellant(s): EMERY, RICHARD D.

MAILED

FEB 27 2007

Mark C. Van Ness
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
For Appellant

GROUP 2800

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/3/06 appealing from the Office action
mailed 5/31/06.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4,415,025	Horvath	11-1983
6,081,037	Lee et al.	06-2000
2002/0171144	Zhang et al.	11-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

DETAILED ACTION

Claim Objections

Claims 4, 6 and 31 are objected to because of the following informalities:

Line 1, claim 6, replace "a side of the die" with --the edge of the die--.

Line 3, claim 4, replace "the plate" with --the first plate--.

Line 5, claim 31, replace "the plate" with --the first plate--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1, 4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. (U.S. Pat. 6,081,037).

Lee et al. disclose a microelectronic device comprising:

the die 11, the die comprising a first side, a second side, and an edge;

a first plate 31, the first plate coupled with the die; the first plate inherently

exerting force on the die (the edges 35 and 37 of the first plate 31 compress

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sidewalls of the chip 11) to modify the effective coefficient of thermal expansion of the die;

and a package 21, the die being coupled with the package (fig. 2, column 3, lines 20-29).

- Regarding claim 4, Lee et al. disclose that the first plate comprises a hole 34, the die fitting within the hole, the edge of the die being coupled with an edge of the first plate by the hole (fig. 2).
- Regarding claim 6, Lee et al. disclose that the edge of the die is coupled with a side of the first plate (fig. 2).

3. Claims 1 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Horvath (U.S. Pat. 4,415,025).

Horvath discloses a semiconductor package comprising:

a die 12, the die comprising a first side, a second side, and an edge;

a first plate 24, the first plate coupled with the die, the first plate exerting force on the die to modify the effective coefficient of thermal expansion of the die; and a package, the die being coupled with the package (fig. 1, column 3, lines 47-53).

- Regarding claim 6, Horvath discloses that the side of the die is coupled with a side of the first plate (fig. 1).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. or Horvath in view of Zhang et al. (U.S. Pub. 20020171144).

Lee et al. or Horvath substantially discloses all the limitations as claimed above except for the first plate modifies the CTE of the die to make the CTE of the die more closely match the CTE of the package.

However, Zhang et al. discloses a semiconductor package comprising:

a die 102, the die comprising a first side, a second side, and an edge;

a first plate 502, wherein the first plate is a copper plate 502;

a substrate 104 and a second plate 504; wherein the substrate and the second plate are made of copper (paragraph 0043) and wherein the first plate modifies the CTE of the die to make the CTE of die more closely match the CTE of the package (fig. 5, paragraph 0065). Therefore, it would have been obvious to one having ordinary in the art at the time the invention was made to modify the device structure of Lee et al. or Horvath by having the CTE of the die more closely match the CTE of the package because as taught by Zhang, the CTE's match would minimize the mismatch of the thermal expansion coefficients of the package (paragraph 0065).

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- Regarding claim 7, Zhang et al. disclose the package further comprising a second plate 504 coupled with the package (fig. 5, paragraph 0065).
- Regarding claim 8, Zhang et al. disclose that the package is attached with the second plate 504 by an adhesive 518 (fig. 5).
- Regarding claims 9-10, Lee et al. disclose that the first plate is constructed of copper (column 3, lines 15-17); Zhang et al. disclose that the first plate 502 and second plate 504 are constructed of copper (fig. 5, paragraph 0065).
- Regarding claims 9-10, Horvath discloses the first plate 24 is constructed of copper (column 3, lines 31-33); Zhang et al. disclose that the first plate 502 and second plate 504 are constructed of copper (fig. 5, paragraph 0065).
- Regarding claims 9-10, Turner discloses the first plate 5 or 6 is metallic material and it would have been obvious to select the metallic material is copper; Zhang et al. disclose that the first plate 502 and second plate 504 are constructed of copper (fig. 5, paragraph 0065).

Allowable Subject Matter

Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 31-37 are allowed. See the examiner's statement of reasons for allowance in the previous office action.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

(10) Response to Argument

Response to argument directed to the rejection of claims 1, 4 and 6 as being unpatentable over Lee et al. (U.S. Pat. 6,081,037).

The Appellant argues that there is no indication in Lee et al. reference of any teaching or suggestion of a plate that is to exert a force to on a die to modify the effective coefficient of thermal expansion of the die.

The Appellant's argument have been fully considered but they are not persuasive because Lee et al. reference recites the same structural limitations as that recited in claim 1. Specifically, Lee et al. recites a die 11, a plate 31, wherein the plate 31 coupled with the die 11; the sidewalls 35 and 37 of the plate 31 compress the sidewalls 15 and 17 of the die 11 during the expansion and contraction processes (fig. 2, column 3, lines 27-32). It is also noted that the Appellant's claim 1 does not recite the particular material of which the plate is made of, but the Lee et al. reference recites the plate to be made of metal [copper] (Lee et al., column 3, lines 15-17) (the same metal of the Appellant's plate), and the method by which it is attached to the package compress the sidewalls of the die (i.e. "exerting force"). Finally, it is noted that a recitation with respect to the manner in which a claimed apparatus/device is intended to be used does not differentiate the claimed apparatus/device from the prior art apparatus/device, if the claimed structural limitations are the same. Specifically, the limitation of claim 1, line 4: "to modify the effective coefficient of thermal expansion of the die" is seen as merely

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intended use language and does not differentiate the recited structure from the prior art structure.

Response to argument directed to the rejection of claims 1 and 6 as being unpatentable over Horvath (U.S. Pat. 4,415,025).

The Appellant's arguments are noted. However, the Horvath reference also recites the same structural limitations as that recited in claim 1. Specifically, Horvath recites a die 12, a plate (i.e. a thermal bridge element 24), and a package, as is clearly shown in figure 1. It is also noted that the Appellant's claim 1 does not recite the particular material of which the plate is made of, but the Horvath reference recites the plate to be made of copper (column 3, lines 30-33), and that a permissible force is exerted on the die 12 (column 3, lines 47-55). Finally, as similarly noted above for the Lee et al. reference, it is noted that a recitation with respect to the manner in which a claimed apparatus/device is intended to be used does not differentiate the claimed apparatus/device from the prior art apparatus/device, if the claimed structural limitations are the same. Specifically, the limitation of claim 1, line 4: "to modify the effective coefficient of thermal expansion of the die" is seen as merely intended use language and does not differentiate the recited structure from the prior art structure.

Response to argument directed to the rejection of claims 1 and 6 as being unpatentable over Turner (U.S. Pub. 2002/0185728).

The Appellant's arguments as to the Turner reference are noted. In light of the Appellant's arguments, the Turner reference is withdrawn and the rejection of the claims in view of Turner is moot.

Response to argument directed to the rejection of claims 3 and 7-10 as being unpatentable over Lee et al. or Horvath in view of Zhang et al. (U.S. Pub. 2002/0171144).

The Appellant argues that Zhang et al. reference does not provide for a plate exerting forces on a die to modify its effective coefficient of thermal expansion.

Appellant's arguments have been fully considered but they are not persuasive because this argument has no immediate apparent relevance to the issues presented by the rejection before us since an Appellant cannot show nonobviousness by attacking references individually wherein the rejection is based upon a combination of references. In re Young, 403 F. 2d 754, 757, 159 USPQ 725, 728 (CCPA 1968).

It should be noted that the rejection of claims 3 and 7-10 are not based on anticipation, but rather, are based on obviousness.

Examiner relies on the combined teachings at Lee et al. or Horvath in view of Zhang et al. Zhang et al. reference is not relied on for teaching the plate exerting forces on a die to modify its effective coefficient of thermal expansion. Zhang et al. is relied on for teaching the first plate 502 modifies the CTE of the die 102 to make the CTE of die more closely match the CTE of the package (fig. 5, paragraph 0065). The examiner thus regards the Appellant's assertions as constituting evidence that the Appellant has failed to consider as a whole the prior art teachings disclosed by the combining of the references.

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(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

DiLinh Nguyen

Conferees:

Mr. Ricky Mack, SPE



Mr. Wael Fahmy, SPE

